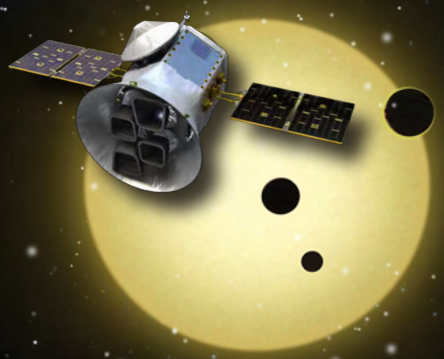
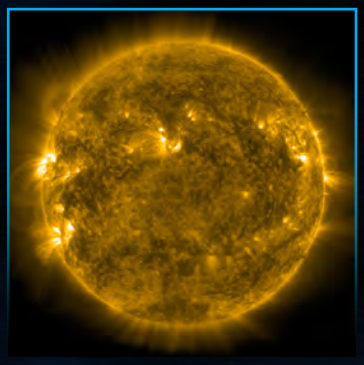
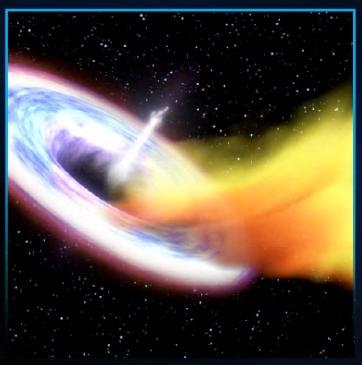
National Aeronautics and Space Administration

TRANSITING EXOPLANET SURVEY SATELLITE

TESS







- Exoplanets
- Solar System Objects
- Stellar Pulsation
- Flare Stars
- Accreting Stars
- Stellar Activity Cycles
- Supernovae
- Active Galaxies
- Transients
- Binary Stars

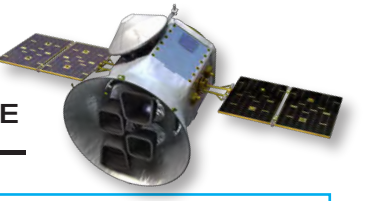
TESS Guest Investigator Program

DISCOVERING NEW EARTHS AND SUPER-EARTHS IN THE SOLAR NEIGHBORHOOD

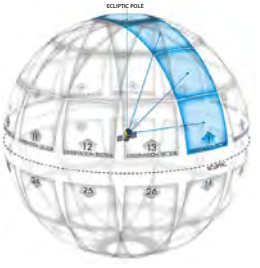
www.nasa.gov

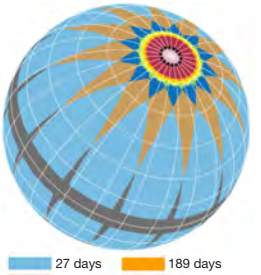
TESS

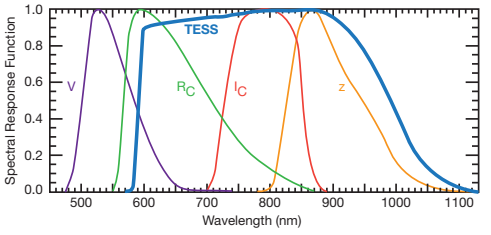
TRANSITING EXOPLANET SURVEY SATELLITE

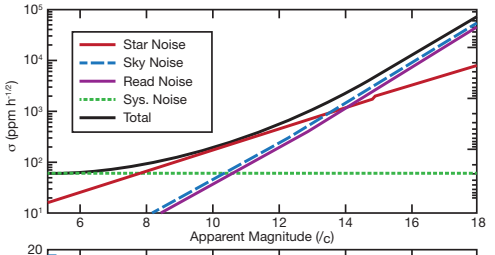


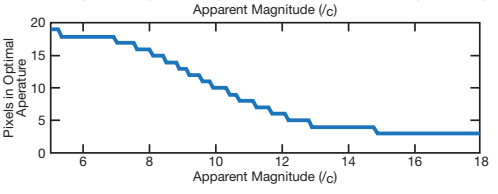
TESS Mission Overview











The TESS Mission

The Transiting Exoplanet Survey Satellite (TESS) is a NASA Explorer mission that will monitor several hundred thousand Sun-like and smaller stars for transiting planets (Ricker et al. 2015), concentrating on the brightest dwarf stars for which follow-up measurements can yield planet masses and atmospheres. After launch (no later than June 2018), TESS will spend two years observing nearly the entire sky using four wide-field cameras, with the objective of photometrically detecting transits of planets smaller than Neptune around nearby FGKM stars. Compared to Kepler, TESS targets will generally be brighter by ~3 magnitudes, and be discovered over a ~400 x larger solid angle. The instrument's high-precision photometry capability is also sufficient for asteroseismology research and other variability analyses of both Galactic and extragalactic astrophysical sources. TESS will monitor ~200K stars with 2-minute cadence, and simultaneously collect full-frame images of the TESS FOV every 30-minutes. TESS will provide photometric precision of 200 ppm in 1 hour on an I=10 star, with systematic noise sources <60 ppm/hr.

The portions of the sky that TESS will observe most extensively coincide with the zones of longest continuous visibility with the James Webb Space Telescope (JWST) for follow-up studies of planetary atmospheres. Those zones are centered on the ecliptic poles. TESS will survey the sky in a series of thirteen observing segments, each 27-days long. It will spend the first year on one ecliptic hemisphere, then rotate to spend the second year on the opposite hemisphere. Depending on sky position, TESS targets will be observed for a minimum of 27 days up to a maximum of 351 days.

GI Program Overview

The TESS Guest Investigator Program will support the Astronomical Community in carrying out a wide range of scientific investigations using TESS data. The GI Program will:

- Solicit proposals for new investigations using
  - 2-minute cadence data on ~10K GI science targets per Cycle
  - 30-minute cadence full-frame image data
- Start concurrently with the beginning of TESS Science Operations
- Operate for the duration of the primary mission

TESS data have no proprietary period.

Total funds available to PI's at US institutions: ~$2.5M per Cycle.

GI Proposal Preparation

- TESS GI Program Website will contain detailed information about the GI program, including how to propose, and tools to help plan proposals and generate target lists: ***http://heasarc.gsfc.nasa.gov/docs/tess/***
- The call for proposals will be released as part of the upcoming NASA ROSES Grant Solicitation: ***https://nspires.nasaprs.com/external/***
- TESS will use a 2-Phase proposal process, in which science proposals and target lists will be submitted via the Remote Proposal System (RPS): ***http://heasarc.gsfc.nasa.gov/ark/rps/***
- Successful PI's will be invited to submit budgets through NSPIRES: ***https://nspires.nasaprs.com/external/***

Cycle 1 Schedule

The TESS Cycle 1 Schedule is tied to the Launch date (=L)

- *Call for Proposals Released:* ~L-9 months
- *Phase 1 Proposals Due:* ~L-6 months
- *Peer Review:* ~L-4 months
- *Cycle 1 Results Announced:* ~L-2 months
- *TESS Observation Segment 1 Begins: L+60* day

MASSACHUSETTS INSTITUTE OF TECHNOLOGY • NASA GODDARD SPACE FLIGHT CENTER • ORBITAL ATK
NASA AMES RESEARCH CENTER • SPACE TELESCOPE SCIENCE INSTITUTE • SMITHSONIAN ASTROPHYSICAL OBSERVATORY

For more information, visit http://tess.gsfc.nasa.gov or see our Facebook page at https://www.facebook.com/NASATESS

FS-2016-9-501-GSFC